

WAVELENGTH TUNABLE LIGHT SOURCES AND METHODS OF OPERATING THE SAME

ABSTRACT

Wavelength tunable light sources and methods of operating the same are
5 described. In one aspect, a wavelength tunable light source includes a resonant
light path, an optical gain medium, an optical grating, a first acousto-optic
deflector, and a second acousto-optic deflector. In another aspect, a light source
has a resonant light path containing first and second acousto-optic devices for
tuning an output light beam over a specified frequency range with an output
10 wavelength profile. The first acousto-optic device is driven with a first signal
having a first time-varying frequency profile. The second acousto-optic device is
driven with a second signal having a second time-varying frequency profile,
wherein the second time-varying frequency profile differs from the first time-
varying frequency profile by an amount substantially proportional to a time rate
15 of change of the output wavelength profile. In this way, the output light beam is
tunable over the specified frequency range without observable hopping between
longitudinal modes.